

SHORT COMMUNICATION

A new species of *Cryptocellus* (Arachnida, Ricinulei) from northwestern Colombia

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Abstract. *Cryptocellus platnicki* sp. nov. is described on the basis of specimens of both sexes from two localities in northwestern Colombia. The new species, which is most similar to *C. glenoides* Cooke & Shadab 1973, brings to 64 the known species of living ricinuleids, and becomes the sixth known from Colombia.

Keywords: Ricinuleids, taxonomy, *Cryptocellus platnicki* sp. nov.

Ricinulei is one of the rarest arachnid orders, comprising 63 living species known to date. Extant representatives are gathered into the family Ricinoididae, which includes the Western African genus *Ricinoides* Ewing 1929, the Central American *Pseudocellus* Platnick 1980, and the primarily South American *Cryptocellus* Westwood 1874. The last genus includes 32 known species (Bonaldo & Pinto-da-Rocha 2003; Harvey 2003; Cokendolpher & Enríquez 2004; Pinto-da-Rocha & Bonaldo 2007; Tourinho & Azevedo 2007; Platnick & García 2008), five of which are present in Colombia: *Cryptocellus magnus* Ewing 1929 (= *C. manni* Ewing 1929), *C. glenoides* Cooke & Shadab 1973, *C. peckorum* Platnick & Shadab 1977, *C. narino* Platnick & Paz 1979 (Ewing 1929; Cooke & Shadab 1973; Platnick & Shadab 1977; Platnick & Paz 1979), and a new species described by Platnick & García (2008).

In the present paper a new species is described from both male and female specimens collected by pitfall traps and tree agitation on recent expeditions to Acandí, department of Chocó, northwestern Colombia (near the border with Panama). The technique of tree agitation consists in shaking a small tree so that specimens in the upper foliage fall on a blanket placed below. With its description, the number of known species of living ricinuleids is raised to 64, six of which are present in Colombia.

METHODS

General terminology follows Platnick & Shadab (1977), except that of male leg III which follows Cokendolpher (2000). Measurements are presented in millimeters and were obtained according to the procedures outlined by Cooke & Shadab (1973), using the program Motic Images 2000 version 1.2 through a PC connected to a Motic Digital Microscope DM-143. Illustrations were prepared with the aid of a camera lucida mounted onto a Zeiss Stemi SV 6 stereoscope. The specimens are preserved in 70% ethanol.

Specimens examined in this study are lodged in the following museums: Museo Javeriano de Historia Natural "Lorenzo Uribe S. J.", Pontificia Universidad Javeriana, Bogotá, Colombia (MPUJ) and Museu Nacional, Rio de Janeiro, Brazil (MNRJ).

TAXONOMY

Family Ricinoididae Ewing 1929
Genus *Cryptocellus* Westwood 1874

Cryptocellus Westwood 1874:201.

Type species.—*Cryptocellus foedus* Westwood 1874, by monotypy.

Cryptocellus platnicki sp. nov.
Figs. 1–10

Type material.—*Holotype*: COLOMBIA: Department of Chocó: adult male, Acandí, Capurganá, Jardín Botánico del Darién, 08°37'N,

77°21'W, 50 m elev., pitfall, 29 April 2007, E. González, D. Montañez & D. Peña (MPUJ-RIC-002).

Paratypes: COLOMBIA: Department of Chocó: 1 adult female, Acandí, Capurganá, Jardín Botánico del Darién, 08°37'N, 77°21'W, 50 m elev., pitfall, 29 April 2007, P. Chávez, L. Leiva & L. Rojas (MPUJ-RIC-003); 1 adult male, Acandí, Capurganá, Vereda Girasoles, 08°37'N, 77°21'W, forest, 330 m elev., ad hoc, 14:00 hours, 8 October 2007, I. Cuadros, A. Rodríguez, L. Restrepo & C. Parra (MPUJ-RIC-004).

Other material: COLOMBIA: Department of Chocó: 1 female tritonymph, Acandí, Capurganá, Vereda Girasoles, 08°37'N, 77°21'W, forest, 330 m elev., tree agitation, 15:00 hours, 7 October 2007, F. Niño, S. Arciniegas & G. González (MPUJ-RIC-005); 1 female deutonymph, Acandí, Capurganá, Jardín Botánico del Darién, 08°37'N, 77°21'W, 40 m elev., tree agitation, 08:00 hours, 10 October 2007, C. Latorre (MPUJ-RIC-006).

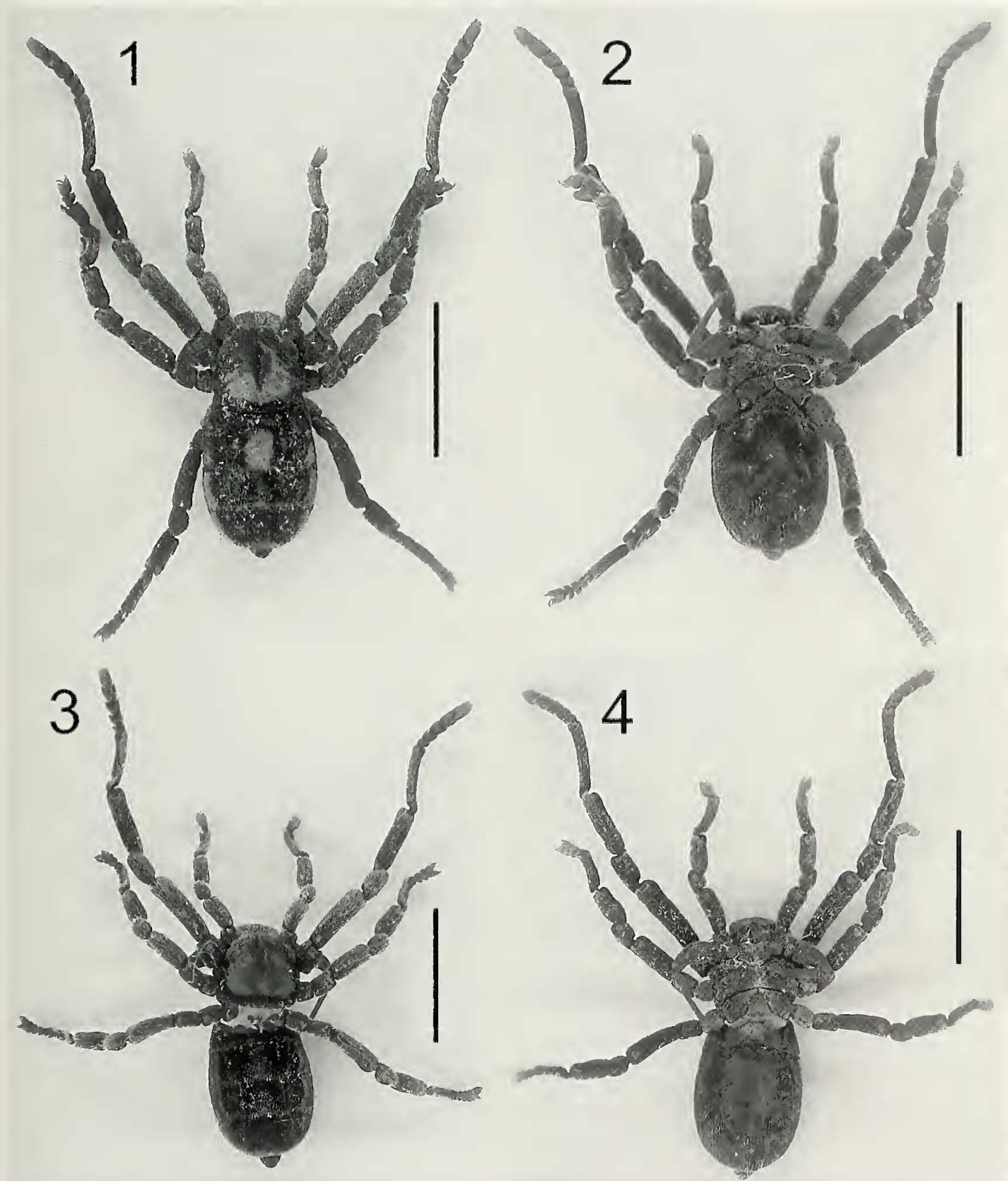
Etymology.—Patronym dedicated to Norman I. Platnick, arachnologist at the Division of Invertebrate Zoology of the American Museum of Natural History, New York, who has published many contributions on the New World ricinuleids.

Diagnosis.—The new species is most similar to *C. glenoides*, with which it shares the following features: (i) carapace, cucullus, abdomen and appendages densely covered with long fine translucent setae; (ii) scale-like setae completely absent; (iii) cucullus with only some scarce tubercles restricted to anterior and lateral margins; (iv) earpace without pits (Fig. 5); (v) trochanter IV unmodified; (vi) basal segment of pygidium unnotched on either dorsal or ventral posterior borders; (vii) fixed process of the male copulatory apparatus with an anteroventral ledge. The new species can be readily distinguished from *C. glenoides* by the following: (i) shape of the carapace, which is subtriangular in the new species (Fig. 5), but almost quadrangular in *C. glenoides*; (ii) shape of the movable process of the male copulatory apparatus, which is curved and not bifid in the new species (Fig. 7), but almost straight, dorsoventrally flattened, and bilobed in *C. glenoides* (Cooke & Shadab 1973:figs. 27, 37); (iii) shape of the female spermathecae: see Figures 9, 10 for the new species, and Platnick & Shadab (1976:fig. 17) for *C. glenoides*.

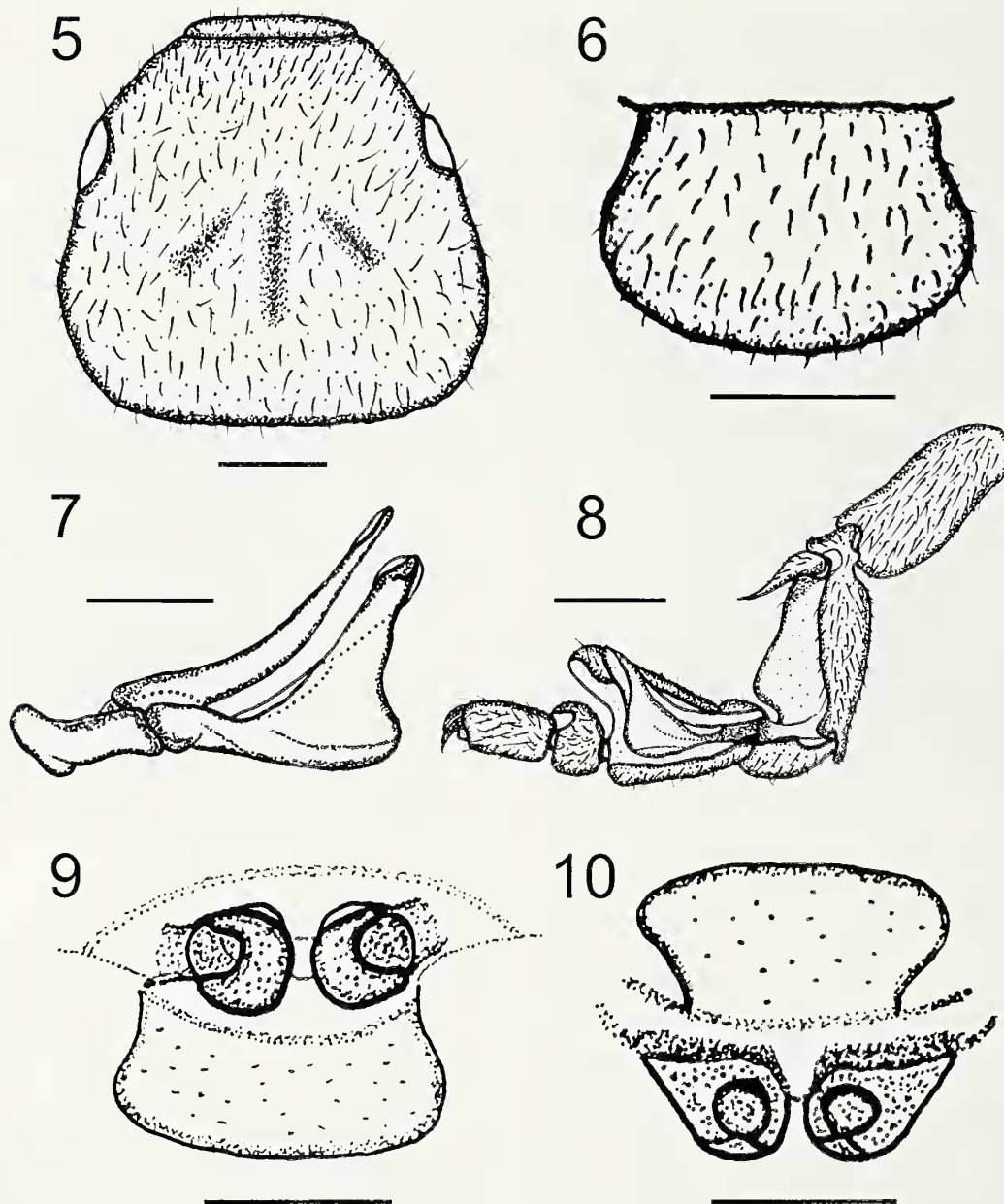
Description based on male holotype (MPUJ-RIC-002).—*Coloration*: Body and appendages reddish-brown, except pedipalps, chelicerae, and distal segments of legs, which are yellowish to light-red; abdominal articular membranes yellow.

Setation: Carapace, cucullus, abdomen and legs densely covered with long fine translucent setae uniformly distributed throughout (Figs. 5, 6, 8); sternal region and pedipalps with shorter hairs.

Carapace: Subtriangular; as long as wide, widest at middle of leg III; with smooth, pale translucent areas located at margins between



Figures 1–4.—*Cryptocellus platnicki* sp. nov.: 1, 2. Male holotype (MPUJ-RIC-002), dorsal and ventral views; 3, 4. Female paratype (MPUJ-RIC-003), dorsal and ventral views (the abdomen was separated to study the spermathecae). Scale bars: 3 mm.



Figures 5-10.—*Cryptocellus platnicki* sp. nov. 5-8. Male holotype (MPUJ-RIC-002): 5. Dorsal view of the carapace; 6. Cucullus; 7. Anterior view of movable (above) and fixed (below) processes of the copulatory apparatus. 8. Anterior view of leg III. 9, 10. Female paratype (MPUJ-RIC-003): 9. Spermathecae, anterior view; 10. Spermathecae, posterior view. Scale bars: 0.5 mm (Figs. 5, 6, 8); 0.25 mm (Figs. 7, 9, 10).

legs I and II; with very few tubercles and devoid of pits; median longitudinal furrow present, beginning at level of junction between coxae I and II, ending near posterior end of carapace (Fig. 5).

Cucullus: Slightly wider than long, widest anteriorly (Fig. 6); with few tubercles restricted to anterior and lateral margins.

Chelicerae: Movable fingers armed with nine teeth almost equally sized (both chelicerae); fixed finger of left chelicera with five teeth increasing in size distally; fixed finger of right chelicera also with five teeth, but third most distal tooth considerably enlarged (equal to fourth on left finger), and fourth most distal tooth markedly reduced.

Sternal region: Coxae I not meeting tritosternum, coxae II meeting posteriorly, coxae III meeting at midline, coxae IV meeting anteriorly.

Abdomen: Longer than wide, widest at anterior margin of tergite XII; almost devoid of tubercles, except for few placed close to midline on median plates of tergites XI-XII; median plates of tergites XI-

XIII and corresponding sternites with paired lateral depressions between which median elevation occurs on dorsal plates; all median plates wider than long. Basal segment of pygidium unnotched on either dorsal or ventral posterior borders.

Pedipalps: With few tubercles on trochanters, and others more abundant on femur basally; femora considerably enlarged; both claws with numerous minute teeth.

Legs: With tubercles somewhat dispersed on all segments; trochanter IV unmodified; tarsal claws short, strongly curved. Copulatory apparatus as in Figures 7, 8, with movable process curved and not bifid, and fixed process with an anteroventral ledge.

Comparison with the female paratype (MPUJ-RIC-003).—Coloration as in male. Left chelicera with ten teeth on movable finger. Abdomen with shorter setae throughout, denser tuberculation on tergite XII. Spermathecae as in Figures 9, 10. Pedipalp femur with fewer basal tubercles.

Measurements (mm).—*Male holotype* (MPUJ-RIC-002): Body total length, excluding pygidium 4.71; cucullus 0.78 long, greatest width 0.96; carapace 1.56 long, 1.61 wide between legs II–III; abdomen 2.37 long (excluding pygidium), 2.05 wide near middle of tergite XII where widest; pedipalp femur 0.76 long, greatest diameter 0.38; pedipalp tibia 1.0 long, greatest diameter 0.19; femur I 0.81 long, 0.38 in diameter; femur II 2.0 long, 0.40 in diameter.

Male paratype (MPUJ-RIC-004): Body total length, excluding pygidium 5.14; cucullus 0.84 long, greatest width 0.94; carapace 1.71 long, 1.72 wide between legs II–III; abdomen 2.59 long (excluding pygidium), 2.09 wide near middle of tergite XII where widest; pedipalp femur 0.79 long, greatest diameter 0.44; pedipalp tibia 1.13 long, greatest diameter 0.21; femur I 0.83 long, 0.40 in diameter; femur II 1.73 long, 0.45 in diameter.

Female paratype (MPUJ-RIC-003): Body total length, excluding pygidium 5.08; cucullus 0.90 long, greatest width 1.01; carapace 1.58 long, 1.96 wide between legs II–III; abdomen 2.60 long (excluding pygidium), 2.21 wide near middle of tergite XII where widest; pedipalp femur 0.89 long, greatest diameter 0.48; pedipalp tibia 1.18 long, greatest diameter 0.20; femur I 0.86 long, 0.39 in diameter; femur II 1.61 long, 0.47 in diameter.

Variation.—The male paratype (MPUJ-RIC-004) bears 4:3 teeth on the fixed fingers of chelicerae, and 8:8 on the movable fingers. *Nymphs*: the coloration is yellowish; the carapace, cucullus, sternal region, tergites and sternites are densely covered with tubercles similar to those of the legs. This indicates that the granulation varies among different stages.

Distribution.—*Cryptocellus platnicki* is known from two localities: Jardín Botánico del Darién and Vereda Girasoles, Capurganá, Acandí, department of Chocó. These localities belong to the Colombian Chocó-Magdalena Biogeographic Region as defined by Hernández-Camacho et al. (1992), an area of confluence of both Central and South American elements of fauna characterized by a high level of endemism.

Remarks.—As noted already, *C. platnicki* is most similar to *C. glenoides*, which was placed as the most plesiomorphic branch of the *C. magnus* species group by Platnick & Paz (1979:fig. 1) due to its straight and massive movable process of the male copulatory apparatus characteristic of this group. In a later contribution, however, Platnick & Shadab (1981) argued that *C. glenoides* is probably a member of the *C. centralis* Fage 1921 species group due to the presence on this species of an anteroventral ledge on the fixed process of the male copulatory apparatus on whose basis the *C. centralis* group is defined (Platnick & Shadab 1981) and suggested that the straight and massive movable process may have evolved in parallel in this species. The presence in *C. platnicki* of the anteroventral ledge on the fixed process and the curved movable process may indicate that the new species could belong to the *C. centralis* group, probably representing the sister species of *C. glenoides* supported on their common branch by the massive movable process; however, further synapomorphies are needed to test the monophyly of either the *C. magnus* or the *C. centralis* groups and, as noted by Platnick & Shadab (1981) for *C. glenoides*, resolve this character contradiction.

Other material examined.—*Cryptocellus glenoides*: COLOMBIA: *Departament of Valle del Cauca*: 1 adult ♂, Dagua, El Salto, 03°39'N, 76°41'W, 30 August 2006, A.P.L. Giupponi (MNRJ). *Cryptocellus peckorum*: COLOMBIA: *Departament of Amazonas*: 1 adult ♀, Leticia, indigenous community Monilla Amena, Varzea, 04°06' S, 69°55'W, 70 m elev., pitfall, 6 September 2005, G. Rodríguez (MPUJ-RIC-001).

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LITERATURE CITED

- Bonaldo, A.B. & R. Pinto-da-Rocha. 2003. On a new species of *Cryptocellus* from the Brazilian Amazon (Arachnida, Ricinulei). *Revista Ibérica de Aracnología* 7:103–108.
- Cokendolpher, J.C. 2000. First *Cryptocellus* from Suriname (Ricinulei). *Memorie della Societa Entomologica Italiana* 78:515–520.
- Cokendolpher, J.C. & T. Enriquez. 2004. A new species and records of *Pseudocellus* (Arachnida: Ricinulei: Ricinoididae) from caves in Yucatán, Mexico and Belize. *Texas Memorial Museum, Speleological Monographs* 6:95–99.
- Cooke, J.A.L. & M.U. Shadab. 1973. New and little known ricinuleids of the genus *Cryptocellus* (Arachnida, Ricinulei). *American Museum Novitates* 2530:1–25.
- Ewing, H.E. 1929. A synopsis of the American arachnids of the primitive order Ricinulei. *Annals of the Entomological Society of America* 22(4):583–600.
- Harvey, M.S. 2003. *Catalogue of the Smaller Arachnid Orders of the World*. CSIRO Publishing, Collingwood, Victoria, Australia. 385 pp.
- Hernández-Camacho, J., A. Hurtado, R. Ortiz & T. Walschburger. 1992. Unidades biogeográficas de Colombia. Pp. 103–151. *In* La diversidad biológica de Iberoamérica I (G. Halffter, ed.). Volumen especial, Acta Zoológica Mexicana. Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo-Instituto de Ecología, A.C. Xalapa, Mexico.
- Pinto-da-Rocha, R. & A.B. Bonaldo. 2007. A new species of *Cryptocellus* (Arachnida, Ricinulei) from Oriental Amazonia. *Zootaxa* 1386:47–51.
- Platnick, N.I. & L.F. Gareía. 2008. Taxonomic notes on Colombian *Cryptocellus* (Arachnida: Ricinulei). *Journal of Arachnology* 36:145–149.
- Platnick, N.I. & N. Paz. 1979. On the *Cryptocellus magnus* group (Arachnida, Ricinulei). *American Museum Novitates* 2677:1–9.
- Platnick, N.I. & M.U. Shadab. 1976. On Colombian *Cryptocellus* (Arachnida, Ricinulei). *American Museum Novitates* 2605:1–8.
- Platnick, N.I. & M.U. Shadab. 1977. On Amazonian *Cryptocellus* (Arachnida, Ricinulei). *American Museum Novitates* 2633:1–17.
- Platnick, N.I. & M.U. Shadab. 1981. On Central American *Cryptocellus* (Arachnida, Ricinulei). *American Museum Novitates* 2711:1–13.
- Tourinho, A.L. & C.S. Azevedo. 2007. A new Amazonian *Cryptocellus* Westwood (Arachnida, Ricinulei). *Zootaxa* 1540:55–60.
- Westwood, J.O. 1874. *Thesaurus Entomologicus Oxoniensis*. Clarendon Press, Oxford, UK. 205 pp.

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